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COMMENTS ON THE AUSTRALIAN UMBRACULACEAN MOLLUSCA

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(One text figure.)

For many years two Australian species of molluscs have been referred to the genus *Umbraculum* Schumacher 1817: the reasons given hereunder show why this is incorrect, and a solution to the problem is offered. The present writer, while engaged on an anatomical study of the family Umbraculidae, found that he could not obtain preserved material of the smaller Australian species, *U. corticalis* (Tate) 1889. Thus the observations made here are based purely upon shell characters, the foremost being the muscle scar inside the shell.

From the careful examination of a large series of *Umbraculum* shells, it was observed that the internal scar of the columellar muscle was complete in every case with the exception of the species, *U. corticalis* (Tate). Here the columellar muscle was open on the right side of the shell, and another smaller muscle, the intermediate suspensor muscle, nearly filled the gap between the ends of the columellar muscle. Research through literature showed that this gap in the columellar muscle and the presence of an intermediate suspensor muscle was characteristic of the genus *Tyrodina* Rafinesque 1819 from the north Atlantic and north Pacific Oceans. Together with the genus *Tyrodinella* Mazzarelli 1897, *Tyrodina* comprises the family Tyrodinidae, both genera differing from *Umbraculum* in that the columellar muscle is incomplete. A key to the families and genera

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of the suborder UMBRACULACEA is appended here in order to set out the various characteristics stated above.

A. Columellar muscle complete.

Family Umbraculidae.

Body grossly tuberculose. Shell smaller than animal.

Umbraculum Schumacher 1817.

B. Columellar muscle incomplete, open on the right side.

Family Tylodinidae.

i. Intermediate suspensor muscle present. Shell generally smaller than animal. Radula with rhachidian.

Tyloдина Rafinesque 1819.

ii. Intermediate suspensor muscle absent. Shell larger than animal. Radula without rhachidian.

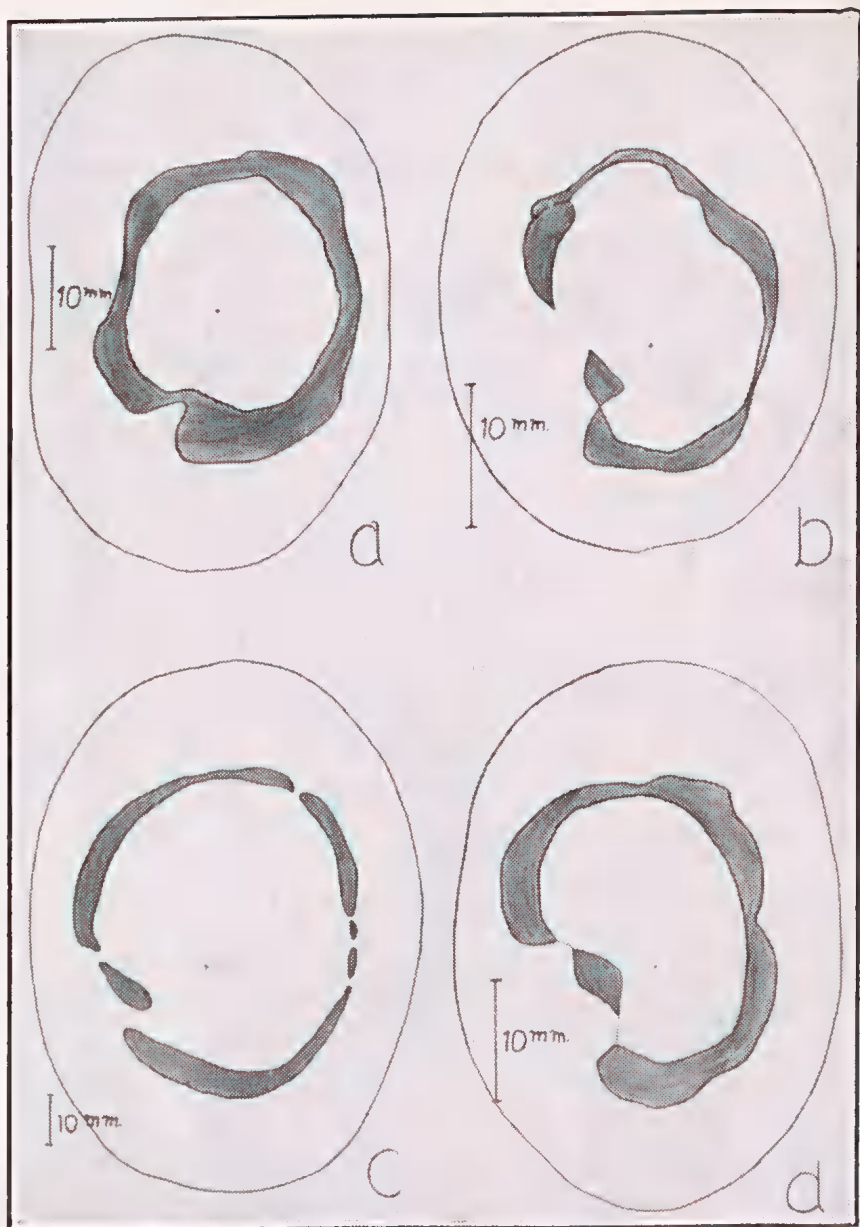
Tyloдинаella Mazzarelli 1897

Through the kindness of Dr. Bengt Hubendick of the Riksmuseum, Sweden, the author was able to obtain sketches of the columellar muscle formations of two differing species of *Tyloдина*. These are reproduced as figures *b* and *c* on the accompanying text figure. They are respectively *b* - *T. citrina* Joannis 1834 from Puerto de Orotova, Canary Islands and *c* - *T. fungina* Gabb 1865 from Laguna Beach, California. Figure *a* represents the type species of the genus *Umbraculum*, *U. sinicum* Gmelin from Mauritius and shows the complete columellar muscle scar on the underside of the shell. *U. corticalis* (Tate) is represented by figure *d* and its close similarity to figures *b* and *c* can easily be seen.

Thus here *U. corticalis* (Tate) is removed from *Umbraculum* and transferred to *Tyloдина*, becoming *Tyloдина corticalis* (Tate). This species is by far the largest of the Tyloдинids, attaining a length of 45 mm. in the largest shell yet examined by the author.

It is also worthy of note that the species *Umbraculum botanicum* Hedley 1923 from New South Wales should be reduced to a synonym of the type species, *U. sinicum* Gmelin. Likewise the author feels that all other species of *Umbraculum* should be reduced to the synonymy of *U. sinicum*, and the genus made monotypical with one circumtropical species, the type. There appear to be no differences, either conchologically or anatomically, in any of the many species attributed to the genus and as such each reverts to the synonymy of the type. The many species have arisen through various authors not having the actual animals to study and creating specific differences on colour and shell shape when both these are extremely variable, the extremes can often be found side by side in the one locality. The study of the animals is the only solution to this problem. Results of the anatomical studies of *U. sinicum* will be presented at a later date.

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Explanation of Text Figure.

- a*—*Umbraculum sinicum* Gmelin from Kurnell, N.S.W.
b—*Tylodina citrina* Joannis from Puerto de Orotova, Canary Islands.
c—*Tylodina fungina* Gabb from Laguna Beach, California.
d—*Tylodina corticalis* (Tate) from South Australia (precise locality not stated).

In each figure the underside of the shell is depicted and the muscle scars shaded.